



United States  
Department of  
Agriculture

Forest  
Service

Arizona Zone  
Entomology and  
Pathology

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**Route To:** \*

**Subject:** Insect and Disease Input to Fire Use Planning Analysis

**To:** Ed Paul, Team Leader

Enclosed, as requested, is brief input concerning existing and desired conditions for insects and diseases for the fire use planning analysis on the Coconino National Forest. Following your format, our input is listed by vegetative type.

### **Mixed Conifer**

**Existing Conditions:** Susceptibility to diseases such as root disease and Douglas-fir dwarf mistletoe and insects such as the western spruce budworm and fir engraver has increased due to changes in species composition, structure, and density. These changes, brought about by fire suppression, have resulted in an increase in suitable host species, greater densities and multi-storied stand structures within this vegetative type. No data set exists that compares today's insect and disease populations with those from presettlement times within the mixed conifer type on the Coconino National Forest. We can only infer likely changes given what we know about past vegetative conditions compared to today's which is described above. Thus we suspect that dwarf mistletoes, root diseases, fir engraver and western spruce budworm have increased.

**Desired Conditions:** Vegetation consists of a mosaic of conditions, created by a mix of disturbance agents including fire, pathogens and insects. Fire is the predominant disturbance in the type, however diseases and insects are present. Insect and disease activity helps to create habitat for other organisms, including wildlife species. Susceptibility to these agents is predominantly low, particularly at the lower elevations of the mixed conifer type where fire frequencies are higher and maintains seral species, but may range from low to high throughout the type.

### **Ponderosa Pine**

**Existing Conditions:** Infection levels of dwarf mistletoe are thought to have increased within the pine type due to increased host densities, filling in of meadows, and increased vertical structure. These changes have occurred with fire suppression this century. Currently about one third of the ponderosa pine type is estimated to be infested by this parasite. On the other hand the incidence of decay organisms in pine has likely decreased due to many of the same changes, but particularly the loss of the mature tree component. Susceptibility to pine bark beetles such as the western pine beetle and pine engraver species has increased due to the expansion of ponderosa pine, higher densities etc.

**Desired Conditions:** Vegetation consists of a mosaic of conditions with a matrix of low to moderate densities with patches, some interconnected, of high densities. Frequent and low intensity fire is the predominant disturbance agent. Dwarf mistletoe is present, distributed in a patchy manner, primarily at low infection levels but also with some moderate to high levels of infection.



These high infection levels can be a concern when covering over an extensive area, however when distributed in patches provide beneficial habitat for a number of wildlife species. Heart rotting organisms are present, scattered throughout the landscape, particularly in the mature age classes, providing habitat for dependent wildlife species. Bark beetle outbreaks occur, generally associated with droughts, causing mortality to pines. During these outbreaks killing of groups of trees occurs but generally group size is relatively small and not extensive.

If you have questions about this input, or need clarification feel free to give me a call at 520-556-2074, or send me email at [jwilson/r3,coconino](mailto:jwilson/r3,coconino).

/s/ Jill L. Wilson

JILL L. WILSON  
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